REMARKS

This amendment is responsive to the new rejection presented in the FINAL Rejection of October 12, 2006. If the amendment does not place the case in condition for allowance, Applicants respectfully request that it be entered for purposes of appeal.

Discussion of Amendments

Claim 1 is amended so as to incorporate the carbon content of between 0.5 and 2.6% by weight as set forth in claim 2, with claim 2 being cancelled.

Claim 6 is amended by making the method for producing the catalyst dependent on the catalyst of claim 1, which means that if the catalyst of claim 1 is considered to be allowable then the method of producing the catalyst would also be allowable under decisional law *In re Ochiai*, 71 Fed. 3rd 1565, 37 USPQ 2nd, 1127 (Fed. Cir. 1995) and *In Re Brouwer*, 77 Fed. 3rd 422, 37 USPQ 2nd, 1663 (Fed. Cir. 1996). Thus, claim 6 is also amended so as to include the range of carbon of between 0.5 and 2.6% by weight that is set forth in claim 1.

Claim 9 is also amended by removing the alternative expression "or the catalyst that is obtained from the method".

It is also seen that claims 13 and 14, which recite the carbon content of 1 to 2.6% by weight, are cancelled, as being redundant.

Rejection of Claim 6 Under 35 U.S.C. 102

Applicants rely on the patentability of claim 1 in order to establish the patentability of claim 6, which is now dependent on claim 1.

Rejections Under 35 U.S.C. 103

At the outset, Applicants respectfully submit that there appears to be an error in the Office Action regarding the content of carbon in Sadakane (EP 0745660). In the Office Action on page 4, it is stated that Sadakane discloses that the catalyst has a carbon content of 2.1% (Sadakane, column

7, lines 31-34) and 2.1% was obtained by multiplying the 3.9% of deposited coke by the atomic ratio of carbon to hydrogen of 0.53).

This is believed to be an incorrect calculation. The atomic ratio of carbon to hydrogen means that for 100 atoms of hydrogen there are 53 atoms of carbon. Consequently, since the atomic weight of carbon is 12 and the atomic weight of hydrogen is 1, it is then necessary to first obtain the weight ratio (the weight of carbon divided by the weight of carbon plus the weight of hydrogen, i.e. (53 x 12) divided by 100 + (53 x 12) which equals 0.864. Thus, it is the value of 0.864 which is multiplied by 3.9% yielding 3.37%, not 2.1%. In Example 2, the content of carbon is much greater - 6.3%, in Example 3, 5.04%, and in Example 4, 7.73%. Thus, notwithstanding the statement on column 9, lines 37 and 38 that the coke deposited is in an amount of about 3 to about 10% by weight of the catalyst, there is neither any motivation nor suggestion for one of ordinary skill in the art to employ a catalyst having an amount of carbon equal to between 0.5 and 2.6% by weight. If anything, the reference leads one of ordinary skill in the art away from such low contents of carbon deposits. Furthermore, Applicants obtain unexpected results by the utilization of a catalyst having a carbon content of between 0.5 and 2.6% by weight and a catalyst substrate having a specific surface of less than 150 m^2/g.

The importance of the low concentration of carbon in the catalyst is demonstrated by Tables 1, 2 and 4. Referring to Table 1 on page 12, the catalyst is supported by a substrate having a specific surface of 130 m^2/g and wherein the catalyst has varying contents of carbon deposited thereon. Catalyst 4 containing 2.4% carbon has the highest activity constant for hydrodesulphurization and also the highest selectivity ratio of the rate of hydrodesulphurization versus hydrogenation of olefins. (It will be recalled that the hydrogenation of olefins leads to a reduction in octane and is therefore not desired.) By examining the results of Table 1, one can note that the results based on carbon contents of 2.6 and below are higher than the results obtained with carbon contents above 2.6. Actually, as the carbon content is increased from 0.7 to 2.4, the activity constant and selectivity increases, and thereafter, the selectivity and deactivity constant and selectivity decreases, resulting in an unexpected discontinuity.

Referring to Table 2, the results are even more pronounced since catalyst 10 having 0.9% carbon achieves an activity constant of 1.03 and selectivity of 1.28 compared to catalyst 11

having 5% by weight of carbon and showing an activity constant of 0.92 and selectivity of 1.10. Likewise, in the same manner, catalysts 15 and 16 achieve unexpected results, irrespective of the method of deposition since these catalysts contain 2.1% by weight of carbon.

With respect to the importance of the specific surface of the substrate, Table 3 on page 14 shows, all other variables being equal, that catalysts based on substrates having specific surfaces below 150 result in higher selectivities than catalysts having specific surfaces above 150. Referring to the Sadakane et al. reference, whereas there is no mention of specific surface therein, Applicants' French representative reports that supports for conventional hydrodesulphurization catalysts have high specific areas (typically higher than 200 m^2/g).

Whereas the Da Costa reference discloses a support having a specific surface in the range of 100 to 600 m^2/g (column 3, lines 26-23). This teaching would not lead one of ordinary skill in the art to Applicants combination of both a low carbon content of between 0.5 and 2.6% by weight and a low specific surface area of less than 150 m^2/g, much less the unexpected and highly advantageous results that are achieved by the utilization of such catalysts.

In view of the above discussion, it is respectfully submitted that claim 1, describing a catalyst, which achieves unexpected results, is truly unobvious and patentable under 35 U.S.C. 103 in this highly crowded art of the hydrodesulphurization of hydrocarbon feedstocks.

Referring now to the dependent claims, it is seen that claim 4 restricts the specific surface area to not more than 130 m^2/g.

At this juncture, attention is courteously invited to section 2144.08, page 2100-160 in the recent Manual of Patenting Examining Procedure revision of August 2005 wherein the left hand column, last paragraph states that a showing of unexpected results for a single member of a claimed subgenus, or a narrow portion of a claimed range would be sufficient to rebut a prima facie case of obviousness if a skilled artisan could ascertain a trend in the exemplified data that would allow him to reasonably extend the probatol value thereof. *In re Clemens* 62 Fed. 2nd 1029, 1036 206 USPQ 289, 296 (CCPA 1980), (evidence of the unobviousness of a broad range can be proven by a narrower range when one skilled in the art could ascertain the trend that would allow him to reasonably extend the probative value thereof). It is respectfully submitted

that the above discussion of the unexpected results shown in the Tables can reasonably be extended to Applicants' ranges in the claims.

In view of the above remarks, favorable reconsideration is courteously requested. If, however, there are any residual issues which may be expeditiously resolved by a telephone conference, the Examiner is courteously invited to telephone Counsel indicated below. If Counsel is unavailable, the Examiner is invited to telephone Mrs. Richardson at 703-812-5326, and she will have the pleasure of involving another attorney.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

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